SENSING

TECHNOLOGICAL FIELD

[0001] Embodiments of the present invention relate to an apparatus and a method. In particular, they relate to sensing using the apparatus and method.

BACKGROUND

[0002] In order to process data representing a real-world parameter, it is necessary to sense that parameter and covert the sensed value to data.

[0003] There is therefore a need for improved sensors.

BRIEF SUMMARY

[0004] According to various, but not necessarily all, embodiments of the invention there is provided an apparatus comprising: a first sensor comprising a sensing material that is sensitive to a first parameter and a second parameter, wherein sensitivity to the first parameter changes sensitivity to the second parameter, wherein the first parameter is deformation and the second parameter is concentration of a gaseous analyte; and a second sensor sensitive to at least one of the first parameter and the second parameter.

[0005] According to various, but not necessarily all, embodiments of the invention there is provided a method comprising: processing an output from a first sensor comprising a sensing material that is sensitive to a first parameter and a second parameter, wherein sensitivity to the first parameter changes sensitivity to the second parameter, wherein the first parameter is deformation and the second parameter is concentration of a gaseous analyte; and processing an output from a second sensor sensitive to at least one of the first parameter and the second parameter.

[0006] According to various, but not necessarily all, embodiments of the invention there is provided an apparatus comprising: at least one processor; and at least one memory including computer program code the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to perform:

[0007] processing an output from a first sensor comprising a sensing material that is sensitive to a first parameter and a second parameter, wherein sensitivity to the first parameter changes sensitivity to the second parameter, wherein the first parameter is deformation and the second parameter is concentration of a gaseous analyte; and

[0008] processing an output from a second sensor sensitive to at least one of the first parameter and the second parameter.

[0009] According to various, but not necessarily all, embodiments of the invention there is provided an apparatus comprising: a first sensor comprising a sensing material that is sensitive to a first parameter and a second parameter, wherein sensitivity to the first parameter changes sensitivity to the second parameter; and wherein a sensitivity of the first sensor to one of the first and the second parameter is controlled by maintaining, as a constant, the other of the first and the second parameters.

[0010] According to various, but not necessarily all, embodiments of the invention there is provided a method comprising: processing an output from a first sensor comprising a sensing material that is sensitive to a first parameter and a second parameter, wherein sensitivity to the first parameter changes sensitivity to the second parameter; wherein a sensitivity of the first sensor to one of the first and the second parameter is controlled by maintaining, as a constant, the other of the first and the second parameters.

BRIEF DESCRIPTION

[0011] For a better understanding of various examples that are useful for understanding the brief description, reference will now be made by way of example only to the accompanying drawings in which:

[0012] FIG. **1** illustrates an example of an apparatus configured to detect a first parameter p1 and/or a second parameter p2;

[0013] FIGS. **2**A to **2**D illustrate examples of different outputs from the apparatus to processing circuitry;

[0014] FIG. **3** illustrates an example of an apparatus comprising one or more sensors;

[0015] FIG. **4** illustrates a cross-section of an example of the sensing material in the apparatus;

[0016] FIGS. **5**A and **5**B illustrate examples where a sensitivity of the first sensor to one of the first and the second parameters is controlled by maintaining, as a constant, the other of the first and the second parameters;

[0017] FIG. **6** plots variation of output from the apparatus with deformation and with concentration of gaseous. analyte;

[0018] FIG. **7** illustrates an example of processing circuitry comprising a processor and a memory; and

[0019] FIG. **8** illustrates an apparatus comprising temperature compensation circuitry.

DETAILED DESCRIPTION

[0020] FIG. **1** illustrates an example of an apparatus **10**. The apparatus **10** is configured to detect a first parameter p1 and/or a second parameter p2, and, may be referred to as a sensor apparatus **10** (when not is use) and a sensing apparatus **10** (when in use).

[0021] The apparatus **10** may be part of a larger apparatus comprising processing circuitry **2**.

[0022] The apparatus **10** comprises a first sensor **20** and a second sensor **30**.

[0023] The first sensor **20** comprises a sensing material **22** that is sensitive to the first parameter p1 and the second parameter (p2). The sensitivity of the sensing material **22** to the first parameter p1 changes a sensitivity of the sensing material **22** to the second parameter.

[0024] The second sensor **30** is sensitive to at least one of the first parameter p1 and the second parameter p2.

[0025] The sensitivity of the first sensor **20** to the first parameter p1 is different to a sensitivity of the second sensor **30** to the first parameter p1 and/or the sensitivity of the first sensor **20** to the second parameter p2 is different to a sensitivity of the second sensor **30** to the second parameter p2.

[0026] In some examples but not necessarily all examples, the first parameter p1 may be deformation (D) of the apparatus **10** and the second parameter p2 may be a concentration of a gaseous analyte at the apparatus **10**.

[0027] The gaseous analyte may be water. The second parameter p2 may then be relative humidity (RH).

[0028] The apparatus **10** may be used with other gaseous analytes such, for example, NH_3, NO_2, Cl_2 as well as organic solvents including methanol and ethanol.

[0029] The deformation (D) may, for example, be a stretching deformation and/or a bending deformation and/or a twisting deformation.